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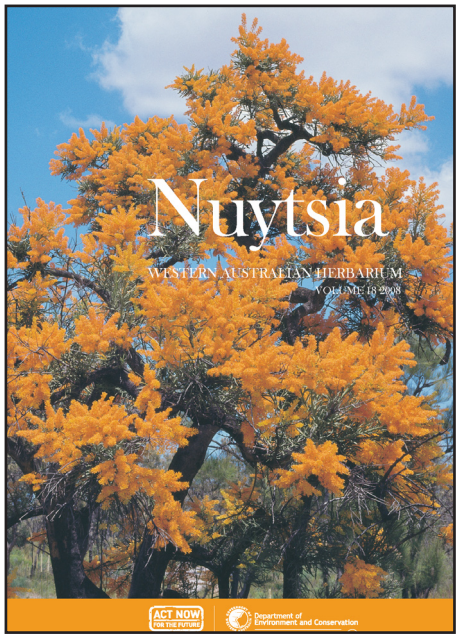

Maslin, B.R. & Buscumb, C. *Acacia umbraculiformis* (Leguminosae: Mimosoideae), a new species related to *A. quadrimarginea* from the Midwest Region of south-west Western Australia

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Acacia umbraculiformis (Leguminosae: Mimosoideae), a new species related to *A. quadrimarginea* from the Midwest Region of south-west Western Australia

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Abstract

Maslin, B.R. & Buscumb, C. *Acacia umbraculiformis* (Leguminosae: Mimosoideae), a new species related to *A. quadrimarginea* from the Midwest Region of south-west Western Australia. *Nuytsia* 18: 133–138 (2008). A new species common in the Midwest Region of Western Australia, *Acacia umbraculiformis* Maslin & Buscumb, is described and assigned to *Acacia* sect. *Juliflorae (*Benth.) C.Moore & Betche. Until recently this species had been confounded with *A. quadrimarginea* F.Muell.

Introduction

The new species described here, *Acacia umbraculiformis* Maslin & Buscumb, is referable to *Acacia* Mill. sect. *Juliflorae* (Benth.) C.Moore & Betche and is most closely related to *A. quadrimarginea* F.Muell. from which it is difficult to distinguish in the absence of pods. Indeed, until recently the new species had been confounded with *A. quadrimarginea* but was recognised as taxonomically distinct by Maslin (1998) who described and illustrated it as *A.* affin. *quadrimarginea. Acacia umbraculiformis* has been known at the Western Australian Herbarium (PERTH) for a number of years under the phrase name, *Acacia* sp. Murchison (B.R. Maslin 7331). Photographs of the new species are posted on the WorldWideWattle website at www.worldwidewattle.com and its distribution shown on *FloraBase* (Western Australian Herbarium 1998–).

The impetus for the present study is that some populations of *A. umbraculiformis* occur on a mining lease area located on Karara Station east of Morawa. It was therefore deemed desirable to formalise the name and to assess the conservation status of the new taxon in relation to public environmental reports that are currently under development for the area.

The boundaries of the two administrative regions referred to throughout this paper, the Midwest Region and Wheatbelt Region, are given in Department of Conservation and Land Management (2006).

Taxonomy

Acacia umbraculiformis Maslin & Buscumb, *sp. nov.*

Arbores bene-formatae obconicae 3–6(–7) m altae. Ramuli plerumque glabri. Phyllodia 5–11 cm longa, (2–)3–7.5 mm lata, linearia vel anguste elliptica, falcato-recurva, late effusa, nitida, glabra praeter statu juvenilis, atro-virentia, subtiliter multi-nervata, nervo marginali plerumque rubro-brunneo et resinoso. Pedunculi 2–8(–12) mm longi; spicae breviter cylindraceae vel obloideae vel sub-globulares, 3–10 mm longae (in sicco). Flores 5-meris; sepala ± libra vel 1/4–1/3 conjuncta. Legumina 5–16 cm longa, 6–9 mm lata, anguste oblonga vel linearia vel sub-moniliformia, in sectionibus non quadrangularia ut *A. quadrimarginea*, firme coriacea-crustacea vel sub-lignosa, atro-brunnea; nervus marginalis discretus, flavus vel pallide brunneus. Semina in legumine longitudinalia, obloidea vel ellipsoidea, grandia (5–10.5 mm longa, 5–6.5 mm lata; arillus parvus.

Typus: Koolanooka Hills, east of Morawa, Western Australia, 30 September 1990, *B.R. Maslin* 6602 (*holo*: PERTH 01162217; *iso*: CANB, K, MEL, NSW).

Acacia affin. *quadrimarginea sensu* Maslin (1998).

Acacia sp. Murchison (B.R. Maslin 7331), Western Australian Herbarium, in *FloraBase*, http://florabase.dec.wa.gov.au [accessed March 2008].

Shapely, obconic *trees* 3–6(–7) m tall, with spreading, flat-topped to sub-rounded crowns 3–6 m across, occasionally low spreading shrubs *c.* 1.5 m tall, single-stemmed or sometimes with up to 6 stems from the base, the stems often slightly crooked. *Bark* grey, longitudinally fissured and fibrous on stems. *Branchlets* terete (occasionally slightly angled at extremities), obscurely ribbed, glabrous except for new shoots, reddish brown (often partially covered with a light grey, ± flaking epidermis) ageing grey, sometimes yellowish at extremities. *New shoots* shiny-resinous with microscopic reddish resin hairlets embedded in a resin matrix at initiation, also with sparse to dense, silver, appressed, non-glandular hairs that become apparent as the shoot elongates, but these hairs (and the resin hairlets) soon lost. *Phyllodes* 5–11 cm long, (2–)3–7.5 mm wide, linear to narrowly elliptic, falcately recurved, wide-spreading, shiny, glabrous (except on new shoots), dark green; *parallel longitudinal nerves* numerous, fine, close together, the central one slightly more pronounced than the rest; *marginal nerve* mostly red-brown and resinous, sometimes yellow, occasionally scurfy white on surface; *apices* acute to acuminate and normally ± curved or occasionally sub-uncinate, innocuous; *pulvinus* 2–4 mm long. *Gland* situated on upper margin of phyllode 0–1.5 mm above pulvinus, inconspicuous. *Inflorescences* 1–4 within axil of phyllodes, simple or occasionally rudimentary, 1-branched racemes 0.5–1.5 mm long; *peduncles* 2–8(–12) mm long, sub-glabrous to densely appressed-hairy but often glabrous when in fruit, often with reddish resin hairlets intermixed with the short, straight, silvery-white non-glandular hairs when in flower; *spikes* shortly cylindrical to obloid or sub-globular, 3–10 mm long (when dry), golden yellow; buds slightly resinous. *Bracteoles* linear-spathulate, about 0.5–1 mm long, brown and ciliolate. *Flowers* 5-merous; *sepals* ± free to 1/4 or 1/3 united, 1/4 (or sometimes almost 1/2) the length of petals, oblong; *petals* 2 mm long, glabrous, 1/2 united, nerveless or obscurely 1-nerved. *Pods* 5–16 cm long, 6–9 mm wide, narrowly oblong to linear or sub-moniliform, occasionally moniliform, pendulous, rounded over seeds and straight-edged to moderately (rarely strongly) constricted between them, sub-straight to prominently curved, glabrous except with microscopic resin hairlets when very young, mature pods either non-resinous or possessing a thin, patchy layer of resin with ± sparse resin

hairlets embedded within the matrix, firmly coriaceous-crustaceous to sub-woody, dark brown but sometimes light brown or yellowish at constrictions; *marginal nerve* discrete and slightly to moderately thickened, yellow or light brown. *Seeds* longitudinal in the pods, obloid to ellipsoid, large (5–10.5 mm long, 5–6.5 mm wide), dull or slightly shiny (satin lustre), dark brown to black, somewhat flattened (2.5–3 mm thick), normally shallowly concave at centre except areole area; *pleurogram* continuous, often slightly raised; *areole* elliptic, to 2.5 mm long, 1 mm wide, minutely pitted, brown (normally slightly lighter brown than rest of the seed); *funicle* short, expanded into small, terminal, cream to orange-cream (when dry) *aril*. (Figure 1)

Characteristic features. Shapely, obconic *trees* 3–6(–7) m tall, with spreading, flat-topped to sub-rounded crowns. *Branchlets* normally glabrous. *Phyllodes* 5–11 cm long, (2–)3–7.5 mm wide, linear to narrowly elliptic, falcately recurved, wide-spreading, shiny, glabrous at maturity, dark green; *parallel longitudinal nerves* numerous, fine and close together; *marginal nerve* mostly red-brown and resinous; *apices* acute to acuminate and normally ± curved, innocuous. *Inflorescences* 1–4 within axil of phyllodes; *peduncles* 2–8(–12) mm long, sub-glabrous to densely appressed-hairy, often glabrous in fruit; *spikes* shortly cylindrical to obloid or sub-globular, 3–10 mm long (when dry), golden. *Flowers* 5-merous; *sepals* ± free to 1/4 or 1/3 united. *Pods* 5–16 cm long, 6–9 mm wide, narrowly oblong to linear or sub-moniliform, occasionally moniliform, sub-straight to prominently curved, firmly coriaceous-crustaceous to sub-woody, dark brown; *marginal nerve* discrete and thickened, yellow or light brown. *Seeds* longitudinal, large (5–10.5 mm long, 5–6.5 mm wide), somewhat flattened; *arils* small.

Selected specimens examined. WESTERN AUSTRALIA: Between Mount Magnet and Cue, 12 July 1931, *W.E. Blackall* 77 (PERTH); City of Melbourne Mine, Yalgoo, 12 May 2004, *B. Hyland* 16803 (PERTH); Blue Hill Range, survey site WRHL07, Warriedar Station, 11 Oct. 2005, *A. Markey & S. Dillon* 3594 (PERTH); 6 km SE of Paynes Find on Maranalgo Road, 3 Oct. 1990, *B.R. Maslin* 6657 (PERTH); 7 km N Mt Magnet, 1 June 1994, *B.R. Maslin* 7331 (AD, MEL, NT, PERTH); 45 km NE of Kalannie, 8 Dec. 1996, *B.R. Maslin* 7561 (PERTH); 5 km due N of Mount Magnet on Great Northern

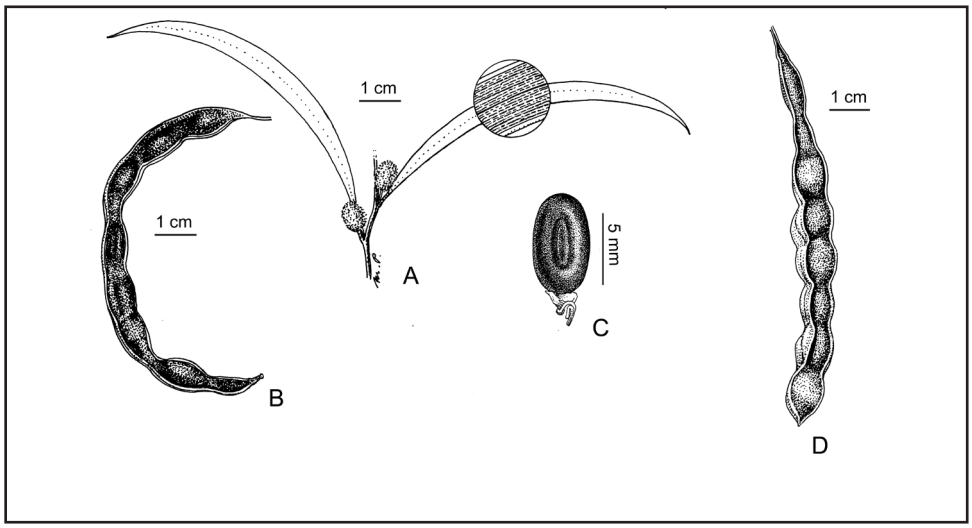

Figure 1 A – C. *Acacia umbraculiformis*. A – portion of branchlet showing distinctively recurved phyllodes; B – pod (note margins not flanged); C – seed. D. *Acacia quadrimarginea* – pod showing distinctively flanged margin. A – *W.E. Blackall* 77. B & C – *T. McKenzie* 3. D – *M. Blackwell* 77 (PERTH). Illustrations by M. Pieroni.

Highway, Oct. 1993, *T. McKenzie* 3 (PERTH); 35 km E of Perenjori, 14 Aug. 1986, *A.A. Mitchell* 1533 (PERTH); Reedy gold mine 60 km N Cue, 10 May 1996, *B.G. Muir* (PERTH); 1 km E of Woolgorong homestead, July 1994, *M. Officer* M09 (PERTH); near Remlap homestead, Washington Rocks, Koorda, 7 Sep. 1999, *R. Storer* 355 (PERTH).

Distribution. Acacia umbraculiformis occurs mostly in the Midwest Region of south-west Western Australia but extends to the northern extremity of the Wheatbelt Region. It ranges from near Cue and Mt Magnet south to near Koorda (this line forms the eastern boundary of its geographic range) and west to near Morawa and north of Mullewa to the vicinity of Pinegrove Station (about 150 km inland from Kalbarri). A few specimens to the northwest of Meekatharra may possibly be referable to *A. umbraculiformis* (see discussion under *Variation* below). Although populations of *A. umbraculiformis* are discontinuous (on account of its habitat specificity) the species is often locally abundant in the places where it occurs (Figure 2).

Habitat. Acacia umbraculiformis grows in rocky habitats, most commonly over granite but sometimes on banded ironstone or basalt; it has also been recorded from laterite in close proximity to granite. Soils range from sandy loam to hard sandy clay-loam. It is found mainly on hill crests and slopes, sometimes along creek lines, in mixed *Acacia* woodland and open *Acacia* shrubland (with, for example, *A. ramulosa* var. *ramulosa, A. tetragonophylla, A. aulacophylla*), and with *Borya* sp. ground cover when it occurs on granite.

Flowering and fruiting period. Acacia umbraculiformis appears to commence flowering in response

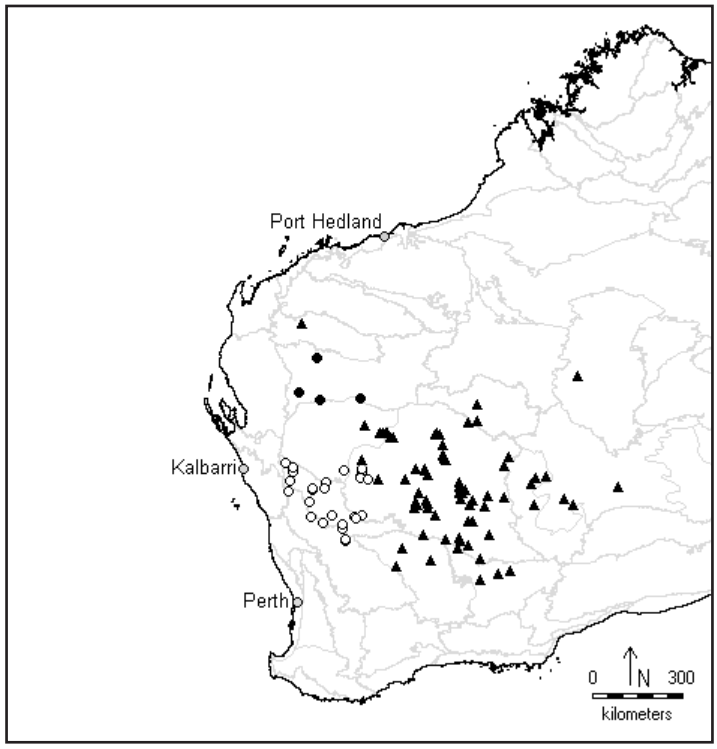

Figure 2. Distribution of *Acacia umbraculiformis* (○), *A.* ? *umbraculiformis* (● - see note under *Variation*) and *A. quadrimarginea* (▲).

to summer and early winter rainfall. The relatively few flowering specimens at hand show the species as flowering in February and April to July. However, because of the sporadic occurrence of rainfall within the geographic range of the species it is not expected that all plants will flower simultaneously during this period. Pods with mature seed have been collected between mid-September and mid-December.

Conservation status. Not considered rare or endangered.

Etymology. The specific epithet is derived from the Latin *umbraculum* (a parasol) and *forma* (shape) in allusion to both the habit of the plants and also to the characteristic wide-spreading, recurved phyllodes that are reminiscent of the curved outline of an open umbrella.

Common name. Western Umbrella Wattle.

Affinities. Until recently plants of *A. umbraculiformis* had been referred to its closest relative, *A. quadrimarginea*. These two species have a similar growth form and characteristically wide-spreading, falcately recurved, multi-nerved phyllodes with red-brown margins; they also possess short, golden spikes on short peduncles. However, *A. quadrimarginea* is readily recognised by its very distinctive pods which are quadrangular in section on account of having a distinct, vertical flange along each margin; this flange is perpendicular to and, importantly, extends beyond the face of the pod (Figure 1D). By contrast, the pods of *A. umbraculiformis* lack a marginal flange that extends beyond the face of the pod; its margins nevertheless possess a discrete, pale-coloured nerve (Figure 1B). Furthermore, the very young pods of *A. quadrimarginea* possess a distinct layer of shiny resin; at maturity these pods either retain the resin layer and/or possess a normally dense layer of resin hairlets (which give the pods an orange-red to dark reddish brown colour, at least when dry). The very young pods of *A. umbraculiformis* appear not to be shiny-resinous (although they do possess resin hairlets) while at maturity the pods are either not resinous or possess a thin, patchy layer of resin with ± sparse resin hairlets embedded within the matrix. Notwithstanding the above discussion we recognize that a more thorough investigation of resinosity in both immature and mature pods of the two species may be helpful in developing a better understanding of this character. Such a study should be based on fresh, living material (our observations were based on dry herbarium specimens). Apart from the pod differences, *A. quadrimarginea* often has longer flowering spikes (normally 10–20 mm long) than those of *A. umbraculiformis*. The geographic ranges of the two species abut in the Meekatharra – Mt Magnet region, with *A. umbraculiformis* distributed to the west of this line and *A. quadrimarginea* mostly to the east of it (and ranging eastwards to the Great Victoria Desert). It is not known if the two species are ever sympatric or whether or not they intergrade morphologically. The geographic ranges of the two species are shown in Figure 2.

Variation. Acacia umbraculiformis is relatively invariate although in the general vicinity of Mt Magnet township the phyllodes, on some plants at least, are consistently slender (at the lower end of the width range) while others from 'The Granites' (about 8 km north of Mt Magnet) are relatively short (at the lower end of the length range) and slightly less recurved than elsewhere. This variation appears not to be taxonomically significant, however, it is noted that Mt Magnet is located near the geographic boundary between the new species and its closest relative, *A. quadrimarginea.*

Additionally, there are a few flowering specimens from north-west of Meekatharra that may possibly be referable to *A. umbraculiformis*, but pods are needed to confirm their identification. These specimens can be arranged in two groups: Group 1 has narrow phyllodes similar to those found on plants from near Mt Magnet (e.g. *R.J. Cranfield* 5346 from Erong Springs Station and *B.R. Maslin*

5195 from Cobra Station); Group 2 has phyllodes that are slightly shorter (to 4 cm long) and more obtuse than normal for *A. umbraculiformis* (e.g. *R.J. Cranfield* 5622 from Yarlarweelor Station and *B.R. Maslin* 5007 from east of Gascoyne Junction).

Rank. Current evidence suggests that, apart from geographic distribution, it is pod morphology (and to a lesser extent, spike length) that enables *A. umbraculiformis* and *A. quadrimarginea* to be reliably distinguished. While it could be argued that these two entities might be treated as infraspecific taxa of *A. quadrimarginea*, the pod differences are very obvious and are judged as being taxonomically significant. It is therefore considered both pragmatic and taxonomically appropriate to recognize the taxa as distinct species. Future studies, especially molecular genetics and pod anatomy, may provide evidence necessitating a reassessment of this rank.

Cultivation. Although it is not known in cultivation this hardy, long-lived species with its attractive growth form could be useful in amenity plantings as a provider of shade for arid and semi-arid areas. In nature it is probably slow-growing but with supplementary water under cultivation it may attain acceptable growth rates.

Acknowledgements

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